Social Work in Health Care, 51:430–440, 2012
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ISSN: 0098-1389 print/1541-034X online
DOI: 10.1080/00981389.2012.657296

Routledge
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Effectiveness of Community Health Workers in Providing Outreach and Education for Colorectal Cancer Screening in Appalachian Kentucky

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The purpose of this study was to examine the effectiveness of a community health worker (CHW)-delivered cancer education program designed to increase knowledge and awareness of colorectal cancer screening options. The study population was an extremely vulnerable and medically underserved geographic region in Appalachian Kentucky. CHWs enrolled participants in face-to-face visits, obtained informed consent, and administered a baseline assessment of knowledge of colorectal cancer risks and the benefits of screening and screening history. An educational intervention was then provided and participants were re-contacted 6 months later when a posttest was administered. The mean score of the 637 participants increased from 4.27 at baseline to 4.57 at follow-up ($p < .001$*). Participants who reported asking their health care provider about colorectal cancer screening increased from*

Received October 20, 2011; accepted January 9, 2012.

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27.6% at baseline to 34.1% at follow-up ($p = .013$*). Results suggest that CHWs were very effective at maintaining the study population; no loss to follow-up occurred. The results also showed increased knowledge and awareness about colorectal cancer screening education. Implications for social work practice, policy and research are discussed.*

KEYWORDS community health workers, cancer awareness, colorectal screening, cancer education, medically underserved population, vulnerable population

INTRODUCTION

Amid an increasing national focus on the quality and efficiency of patient care, community health workers (CHWs) have emerged as a valuable, cost-effective, and culturally competent segment of the health care workforce (Bureau of Health Professions, 2007; Wells et al., 2011). CHWs are frontline lay public health workers who serve as a bridge between community residents and health care providers and they come from various backgrounds with the main requirement being familiarity with the community in which they practice (Brownstein, Hirsch, Rosenthal, & Rush, 2011).

Research indicates that the duties of CHWs are diverse and there is demonstrated effectiveness in the areas of cancer education, translation services, health promotion, increasing patient knowledge of chronic health conditions, increasing positive lifestyle changes and increasing positive self-care and chronic disease management, specifically in regard to breast, cervical, and colorectal cancer screening and treatment management (Brownstein et al., 2005; Earp et al., 1997; Goodwin & Tobler, 2008; Helseth, 2010; Mock et al., 2007; Norris et al., 2006; Nguyen et al., 2010; Taylor et al., 2010; Wells et al., 2011; Witmer, Seifer, Finocchio, Leslie, & O'Neil, 1995; Woodruff, Candelaria, & Elder, 2010). CHWs are often utilized to supplement health care in areas where access to health resources limits the availability of other health professionals (Hermann et al., 2009).

Furthermore, CHWs are useful in their capacity for collaboration with social workers, and the value base of CHWs complements that of social work, as both emphasize social justice as a basis for practice and policy advocacy (Spencer, Gunter, & Palmisano, 2010; Perez & Martinez, 2008). Due to a commonality of values and a focus on vulnerable populations, CHWs are beneficial partners for public health social workers practicing in vulnerable and medically underserved communities, and it may often be worthwhile for them to unite in their efforts to serve those who are underserved (Wheeler, 2011).

CHWs often focus on health disparities in medically underserved populations with varied health needs (Taylor et al., 2010). One area where great disparities exist is in cancer screening. In particular, vulnerable populations in medically underserved communities do not access screening for colorectal cancer at the same rate as the general population and efforts to improve screening knowledge and seeking are needed (Klabunde, Cronin, Waldron, Ambs, & Nadel, 2011). Traditional means of cancer education have thus far been unsuccessful in bringing screening rates in vulnerable groups up to par with the national rates (Klabunde et al., 2011). Thus, unique approaches targeted at specific populations may be needed if screening and knowledge in vulnerable groups are to be increased. Social workers and other health professionals in medically underserved areas are often too overworked to provide the detailed level of intervention necessary to affect screening seeking and knowledge. In light of this, CHWs can step in and partner with public health social workers and health professionals to offer outreach and education about colorectal cancer screening targeted toward the specific demographics of each vulnerable community. Such an approach allows for a targeted health intervention while freeing up social workers and other health professionals to continue in their specific areas of practice.

Due to the prior success of health education interventions delivered by CHWs in other areas, and a concern for the need to increase colorectal cancer screening rates in vulnerable populations, the purpose of this study was to examine whether or not CHWs in Appalachian Kentucky could successfully reach low income, medically underserved residents to deliver a brief cancer education intervention that would increase knowledge and awareness of CRC screening.

LITERATURE REVIEW AND BACKGROUND INFORMATION

Kentucky Homeplace

Kentucky Homeplace (Homeplace) was developed by the University of Kentucky Center for Excellence in Rural Health (Hazard, KY) in the mid-1990s as a health demonstration project. The program's mission is to address health disparities throughout rural Kentucky, where cancer, diabetes, and heart disease rates are unusually high (Kentucky Institute of Medicine, 2007). The program has linked thousands of rural, vulnerable, and medically underserved Kentuckians to medical, social, and environmental services that they might have otherwise gone without. Because of its success, Homeplace had expanded into 58 counties and had 49 employees at the time of this intervention. Its geographic service area spans the length of the state, including many counties in eastern and western Kentucky and those along its southern border. Residents of the areas served by Homeplace are more socioeconomically disadvantaged, less educated, and less likely to have health insurance compared to residents in other parts of the state and nation (Kentucky Institute of Medicine, 2007).

Kentucky Homeplace CHWs

Homeplace CHWs, who are referred to as family health care advisors, are selected from within targeted communities to help link residents to a variety of health and social services. The Homeplace CHWs are trained to help medically underserved residents access appropriate health services, and emphasis is placed on cancer education, preventive care, health education, and disease self-management. Prior research suggests that CHWs would be appropriate for effectively delivering a cancer education program with adequate training and supervision, and would also be a practical and cost-effective means for delivering the intervention to the targeted population (Whitler, Feltner, Owens, & Gross, 2005). Thus, CHWs were chosen to deliver the cancer education program that is the subject of the current study.

While no national CHW training standards currently exist, training is typically designed for the purpose of individual projects (Helseth, 2010). In the case of Homeplace, CHWs receive 40 hours of didactic training and then must perform an 80-hour practicum that includes shadowing seasoned CHWs. Homeplace CHWs receive specific training in cancer education; networking with and accessing local, state, and national health resources; and conducting initial client assessments.

Homeplace clients, many of whom live in counties with unemployment rates in double digits and uninsured rates in excess of 20% (Kentucky Institute of Medicine, 2007) can be referred for services in a multitude of ways (e.g., physicians, social workers, or self-referral). CHWs then set out to help clients meet their cancer education needs. The first step in the process often is a home visit, where the health and cancer education needs of each family is assessed. CHWs educate clients and their families about particular cancer risks; stress smoking cessation, improved diet and increased exercise; and encourage clients to have regular medical checkups and seek preventive cancer care. The focus of the current study is the examination of results from cancer education research conducted by Homeplace CHWs.

COLORECTAL CANCER

Colorectal cancer, as the third most common cancer among men and women in the United States, is a significant public health problem, particularly in Kentucky, where the incidence rate is higher than the national average (Kentucky Colon Cancer Screening Advisory Committee, 2009). The National Cancer Institute (NCI) indicates Kentucky's colorectal cancer mortality rate (20.8 per 100,000 as of 2007) actually is falling, but it remains well above the goal (13.9 per 100,000) set by the Healthy People 2010 initiative (National Cancer Institute, 2010a, 2010b; U.S. Department of Health and Human Services, 2010).

COLORECTAL CANCER SCREENING

Research suggests that there is a need to increase colorectal cancer screening across a variety of demographic groups, as large proportions of even average-risk adults are not obtaining CRC screening as recommended (Cokkinides, Chao, Smith, Vernon, & Thun, 2003; Klabunde et al., 2011). Both individual- and policy-level interventions are needed to increase the use of CRC screening in vulnerable populations, and studies examining the effectiveness of such approaches are important (Holden, Jonas, Porterfield, Reuland, & Harris, 2010). A CHW approach to delivering education about CRC screening intervention may prove to be an effective way to increase screening and knowledge in vulnerable populations. Based on the strong record of success of CHWs, research to improve understanding of their utility in this vein is needed (Viswanathan, 2010). Here we report on results of a project designed to assess the effectiveness of CHWs in reaching vulnerable Appalachian populations with education about CRC screening.

METHODS

Data Collection and Sample

In 2006, Homeplace initiated its Colorectal Cancer Prevention Project based on the CDC Screen for Life: National Colorectal Cancer Action Campaign (Centers for Disease Control and Prevention, 2011a). The project began by providing training to Homeplace CHWs using the "train-the-trainer" method to deliver the colorectal cancer intervention to Homeplace clients who were aged ≥ 50.

Homeplace serves more than 15,000 clients each year, clients receiving services and who met the inclusion criteria were selected to receive the additional education intervention. This included more than 3,000 individuals aged ≥ 50 and those ≥ 40 with a family history of colorectal cancer, based on the CDC recommendations for colon cancer screening (Centers for Disease Control, 2011b). Only those clients aged ≥ 50 who participated in both the pretest and posttest survey ($N = 637$) are reported in the current study. Demographic characteristics of the participants are shown in Table 1.

Measures

A 10-item questionnaire covering knowledge of colorectal cancer and the benefits of screening was developed from the Screen for Life campaign

TABLE 1 Demographic Characteristics of Study Participants, $N = 637$*

Gender	*n* (%)
Male	231 (36.3)
Female	406 (63.7)
Age	
50–64	609 (95.6)
65–75	23 (3.6)
75+	5 (.7)
Race	
White	613 (96.2)
Black/African American	4 (.6)
Other	20 (3.2)
Marital Status	
Married	388 (61.0)
Divorced	113 (17.7)
Never married	39 (6.1)
Widowed	69 (10.8)
Separated	27 (4.3)
Education Level	
8th Grade or Less	173 (27.2)
Some High School	145 (22.8)
High School Graduate/GED	267 (41.9)
Vocational School/Some College	49 (7.7)
College Graduate	3 (.5)
Income: Federal Poverty Level	
100% or less	317 (49.8)
101–200%	274 (43.0)
>200%	46 (7.2)

*All categories do not total to 637 because of missing data.

materials, for the purpose of assessing client knowledge gained from the cancer education project. Over a 6-month period from January–July 2006 the questionnaire was administered as a pretest to gather baseline knowledge of colorectal cancer and the need for screening among enrolled Homeplace clients. Cancer prevention education was presented face-to-face by Homeplace CHWs to clients during either a home or office visit. In the following 6 months, a posttest was administered to measure changes in awareness of colorectal cancer and knowledge of the benefits of screening for prevention of colorectal cancer.

RESULTS

Responses to the 10-item pretest and posttest questionnaire were assigned a value of 1 for each correct and 0 for each incorrect response, with a possible score from 0–10 for each client test. A paired *t*-test was used to measure overall changes in clients' awareness and knowledge from baseline to postintervention. The 10 individual items were analyzed to assess changes in awareness and knowledge reflecting specific barriers to colorectal cancer screening.

Additional survey responses to the pre- and postintervention questionnaires also were analyzed using independent proportions tests (2-sided *P*, CI 95%) to determine changes in client behavior regarding communication with a doctor about colorectal cancer screening, forms of screening used, and barriers to obtaining appointments for screening. Attitudinal and health system barriers to colorectal cancer screening were likewise examined.

A total of 637 subjects participated in the pretest and posttest portions of the study. The mean scores from the 10-item assessment tool were 4.27(*SD* = 1.166) at baseline and 4.57 (*SD* = 1.142) at follow-up. Analysis using a paired *t*-test found $t = 5.281$, 2-sided $P < .001$. Clients were also asked about interactions with physicians regarding colorectal cancer screening. While there was no statistically significant evidence of an increase in physicians asking patients about colorectal cancer screening (41.3% to 44.4%, 2-sided $P = .258$), the follow-up indicated a significantly higher proportion of patients (27.6% to 34.1%, 2-sided $P = .013$) who asked their physicians about screening. Worries about having cancer (2.4% to 1.1%, 2-side $P = .043$), concern about discomfort (8.5% to 4.6%, 2-sided $P = .005$), and embarrassment (2.5% to 1.1%, 2-sided $P = .007$) declined at statistically significant rates as barriers to colorectal cancer screening in follow-up. While "no means of payment" declined (38.0% to 31.6%, 2-sided $P = .016$), it remained a serious barrier at follow-up (Table 2).

DISCUSSION

Implications for Practice

In terms of implications for general health practice, results of this study suggest that the cancer education program delivered by the CHWs was effective at increasing knowledge of cancer risk and the benefits of colorectal cancer screening from pretest to posttest in a sample of low income, medically

TABLE 2 Reported Barriers to Colorectal Cancer Screening at Baseline and Follow-Up

Reported barriers	Baseline *n* (%)	Follow-up *n* (%)	*p*
No time	13 (2.0)	5 (0.8)	.058
No transportation	27 (4.2)	19 (3.0)	.639
No referral from my doctor	207 (32.5)	220 (34.5)	.440
No means of payment	242 (38.0)	201 (31.6)	.016
Too ill	25 (3.9)	17 (2.7)	.209
Worry that I might have cancer	15 (2.4)	7 (1.1)	.043
Concern about discomfort	54 (8.5)	29 (4.6)	.005
Embarrassment	16 (2.5)	4 (0.6)	.007

underserved Appalachian residents. Findings from this study are an important contribution to the existing literature on CHWs as they suggest that CHWs are again effective at increasing screening and knowledge, which is an important part of empowering vulnerable populations and decreasing health disparities (Walsh et al., 2010).

These results are are important to social workers who are interested in partnering up with CHWs to deliver health education programs to vulnerable populations. These results are also in line with recommendations from others suggesting that CHWs can be utilized to affect changes in health disparities for vulnerable populations that are of concern to the social work profession (Chin, Walters, Cook, & Huang, 2007). Also consistent with prior research is the success here of applying social work values to problem solving using para-professional health educators (Linsk et. al., 2010).

As CHW programs continue to demonstrate success, social workers will need to take the lead in developing best practice guidelines for formalized supervision and training programs that are intervention-specific, emphasize social justice for medically underserved communities and focus on the empowerment of vulnerable populations, as is called for by others (Haines et al., 2007).

Implications for Policy

The mounting evidence suggesting that interventions delivered by CHWs can affect health behaviors in vulnerable, medically served individuals, such as is supported by the results of the current study, should serve as a basis for social work and health policy advocacy in this area. Policy change that advocates for CHW positions to be added to public health teams in underserved areas is needed. As the benefits of using CHWs are demonstrated, reimbursement for CHW services should be considered by major third-party payers such as private insurance, Medicaid, and Medicare, and social work advocacy for policy change that will allow for this is needed.

Directions for Future Research

Future research efforts should be designed to include data to compare outcomes in populations that do not receive CHW services. Additionally, future research should focus on examining the effectiveness of CHWs in a variety of medically underserved communities, including urban settings, to determine whether the effectiveness of the current project can be demonstrated with other vulnerable groups and in other areas of health education. In addition, future research should gain samples from groups representing a wider range of demographics. Finally, studies should be conducted that specifically examine the effectiveness of social work–CHW partnerships in affecting social justice for vulnerable populations.

Limitations of Study

The results from this study are limited by two principle factors; the lack of a control or comparison group and self report, the limitations of which are well documented in the social science literature.

CONCLUSIONS

The current study demonstrates that using CHWs to educate vulnerable, medically underserved populations regarding health-related information, and cancer education specifically, is an effective way to achieve health behavior change in disadvantaged communities. In addition, the success of this project suggests that health education can be provided using trained lay workers without relying only physicians, social workers and nurses, who are then freed up to focus on their own areas of practice.

The success of this project gives hope to social workers who are concerned about health disparities in vulnerable communities, as they suggest that partnering with CHWs to design, implement, and supervise cancer education interventions has to potential to positively impact cancer disparities in the most medically challenged communities, while maintaining the social justice expectations of the social work profession. One of the major problems affecting these areas is a lack of an adequate health care workforce willing to engage with this population. If more responsibility can be turned over to social workers partnering with CHWs, perhaps a positive impact can be made in these communities that have been lagging behind in health care for decades.

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